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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,853	02/09/2004	Gordon M. Grivna	ONS00470	7230

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Mr. Jerry Chruma
Semiconductor Components Industries, L.L.C.
Patent Administration Dept - MD/A700
P.O. Box 62890
Phoenix, AZ 85082-2890

EXAMINER	
ABRAHAM, FETSUM	
ART UNIT	**PAPER NUMBER**
2826	

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/773,853	GRIVNA, GORDON M.	
	Examiner	Art Unit	
	Fetsum Abraham	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2005*.

2a)☒ This action is FINAL. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Final rejection

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-10,12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek et al (6,821,840).

As for claims 1,10,18 the prior art discloses a having a matrix of oxidized silicon regions offset from each other and a method of making the same in the following steps;

a) Providing a semiconductor material (201) and forming plurality of straight edged tub like structures with plurality of defined shapes (the etched regions and regions 220) by a process described in column 2, 25-34.

b) Exposing the structures to an oxidation process with an ambient that includes a chemical species that react with the shapes to form isolation regions (102) in the etched regions.

Although the prior art may not have used the terminologies in the claims such as said "tub" to describe the structures in the prior art, it would have been obvious to one skilled in the art to relate the prior art in figure 1C and the claimed invention in figure 9, since tub like structures exist in the prior art and the expression is not well defined in the claims and since an effective isolation structure is formed in the prior art.

As for claim 2, the material inside the etched regions is silicon dioxide.

As for claim 3 the boundary of the tub like etched regions is the recessed portion of the regions.

As for claim 4, the step of oxidizing the etched regions consumes the entire volume by filling then volume fully with the oxide material.

As for claims 5,14, the method of making the prior art further includes a passive electrode (123) partially over the isolation regions and a passive electrode (123) is partially formed between and on the trench isolation structures.

As for claim 6, the method of forming the isolation regions includes etching a portion and leaving a portion of the semiconductor base material (101).

As for claim 7, the depth of an etched portion in a substrate is a known variable in the art of manufacturing trenches that depend on specific requirements such as effective isolation, time of processing, and substrate thickness that differ from a design to another without patentable weight in the absence of criticality.

As for claims 8 and 10, regions (120) form freestanding matrix offset from each other by the trenches in the structure of figure 1.

As for claim 9, the substrate (101) is silicon.

As for claims 12,13,15,16 the isolation regions or trenches are oxidized shapes making a matrix and the step of oxidizing them forms a continuous oxide layer of isolation trenches vertically.

Claims 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnd Jr. et al (6,034,389).

As for claims 10,18, the patent discloses a process of making a structure following the steps of making tub looking structures in a substrate (235) including a matrix of shapes offset from each other in a row (see figure 41, regions 230 and 275), and forming dielectric regions (270, 600) within the shapes.

Although the prior art may not have used the terminologies in the claims such as said "tub" to describe the structures in the prior art, it would have been obvious to one skilled in the art to relate the prior art to the claimed invention since the prior art reads on the most important claim elements such as isolated matrix of regions from the broader interpretation of the claims in examination.

As for claim 11, the vertical regions (270) and the horizontal insulation (600) are substantially square in structure (see figures 40,41).

As for claims 12-14,19 the dielectric regions (270) are oxides in material and are vertically continuous and a passive element (275) is formed on the dielectric material (600).

As for claim 15, the trenches in the structure are circumscribed by insulation layers (270,600) and function like isolated from one another.

As for claims 16,17 the matrix of rows/columns of trenches are provided with insulation materials around the entire circumference and a polysilicon film (275) over the dielectric layers (see figures 40, 41).

As for claim 20, the shapes have recessed boundaries.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Applicant's amendment necessitated this action. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Examiner's response to applicant's argument

The applicant's argument that the prior art omits to define a method of forming an isolation region including a tub with plurality of shapes and exposing the shapes to an ambient with chemical species that form the isolation regions has been considered but found to be moot in view of the following reasons.

Clearly, the patent discloses that the isolation trenches were first identified on a substrate and using mask and lithopgraphy methods to etch the same is taught in column 2, 8-30. Then it teaches that the trenches were exposed to oxidizing process that is commonly known to export the species to react with the silicon base layer to form the isolation material defined to be silicon dioxide in the same column, lines 30-55.

True that there is no "tub" used as an expression in the patent but selection of terminologies purely subjective and cannot be a basis for allowance so long as similar tub like structures are formed on the substrate. In vie of broader interpretation of the so

called tub and structural similarities between the prior art and the claimed invention as stated in the action, the argument in relation to the independent claims have been met by Wieczorek et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fetsum Abraham whose telephone number is: 571-272-1911. The examiner can normally Abe reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915.

Fetsum Abraham
4/25/05